POWER WORKERS' UNION

September 20, 2022

Independent Electricity System Operator
1600-120 Adelaide Street West
Toronto, ON
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Via email to engagement@ieso.ca

Re: IESO's Regional Planning Non-Wires Alternatives (NWA) Assessment Methodology

CANADIAN UNION OF PUBLIC EMPLOYEES, LOCAL 1000, C.L.C.

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The Power Workers' Union ("PWU") represents a large portion of the employees working in Ontario's electricity industry. Attached please find a list of PWU employers.

The PWU appreciates the opportunity to provide input on the IESO's (NWA) assessment methodology. The PWU is a strong supporter and advocate for the prudent and rational reform of Ontario's electricity sector and recognizes the importance of low-cost, low-carbon energy to the competitiveness of Ontario's economic sectors.

The PWU believes that IESO NWA considerations should help deliver Ontario's energy at the lowest reasonable cost while stimulating job creation and growing the province's gross domestic product (GDP). We are respectfully submitting our detailed observations and recommendations.

We hope you will find the PWU's comments useful.

Yours very truly,

Jeff Parnell
President

List of PWU Employers

Alectra Utilities (formerly PowerStream)
Algoma Power
AMEC Nuclear Safety Solutions
Aptum (formerly Cogeco Peer 1)
Atlantic Power Corporation - Calstock Power Plant
Atlantic Power Corporation - Kapuskasing Power Plant
Atlantic Power Corporation - Nipigon Power Plant
Bracebridge Generation
Brighton Beach Power Limited
Brookfield Power Wind Operations
Brookfield Renewable Power - Mississagi Power Trust
Bruce Power Inc.
Canadian Nuclear Laboratories (AECL Chalk River)
Collus Powerstream
Compass Group
Corporation of the County of Brant
Covanta Durham York Renewable Energy Ltd.
Elexicon (formerly Whitby Hydro)
Enwave Windsor
Erth Power Corporation (formerly Erie Thames Powerlines)
Erth Corporation
Ethos Energy Inc.
Great Lakes Power (Generation)
Greenfield South Power Corporation
Grimsby Power Incorporated
Halton Hills Hydro Inc.
Hydro One Inc.
Hydro One CSO (formerly Vertex)
Hydro One Sault Ste. Marie (formerly Great Lakes Power Transmission)
Independent Electricity System Operator
Inergi LP
InnPower (Innisfil Hydro Distribution Systems Limited)
Kinectrics Inc.
Kitchener-Wilmot Hydro Inc.
Lakeland Power Distribution
London Hydro Corporation
Milton Hydro Distribution Inc.
New Horizon System Solutions
Newmarket Tey/Midland Hydro Ltd.
Nuclear Waste Management Organization
Ontario Power Generation Inc.
Orangeville Hydro Limited
Portlands Energy Centre
PUC Services
Quality Tree Service
Rogers Communications (Kincardine Cable TV Ltd.)
Sioux Lookout Hydro Inc.
SouthWestern Energy
Synergy North (formerly Kenora Hydro Electric Corporation Ltd.)
Tillsonburg Hydro Inc.
The Electrical Safety Authority
Toronto Hydro
TransAlta Generation Partnership O.H.S.C.
Westario Power

Power Workers' Union Submission on the IESO's Regional Planning Non-Wires Alternatives (NWA) Assessment Methodology – September 19, 2022

The Power Workers' Union (PWU) is pleased to submit comments and recommendations to the Independent Electricity System Operator (IESO) regarding its August 25 Webinar on the Regional Planning Non-Wires Alternatives (NWA) assessment methodology. The PWU remains a strong supporter and advocate for the prudent and rational reform of Ontario's electricity sector and recognizes the importance of planning for low-cost, low-carbon energy solutions to enhance the competitiveness of Ontario's economy.

Context

The IESO presented its methodology for assessing the costs and benefits of Non-Wires Alternatives (NWAs) to stakeholders at the August 25, 2022, webinar. The IESO requested feedback on the potential considerations that could impact hourly load profiling, improve the options analysis methodology and account for operational considerations e.g., determining storage sizing.

The IESO presented its approach to developing demand forecasts based on models using weather and other variables to produce 465 distinct full-year 8760-hour profiles of which the 50th percentile outcomes would typically be used for the reference case. The PWU supports this approach for establishing the reliability needs of region's electricity system in all hours of the year.

The PWU recommends:

1) Clarifying the needs against which alternatives are assessed to ensure appropriate consideration of costs and benefits and no double booking;
2) Aligning the NWA cost benefit analysis methodology with the Ontario Energy Board's (OEB) Framework for Energy Innovation Working Group (FEIWG) recommendations and subsequent development of an OEB Benefit Cost Analysis (BCA) framework; and,
3) Ensuring the discount rate methodology is predicated on the ratepayer impacts that reflect the expected financial returns of investing stakeholders.

Rationale:

Recommendation #1 - Clarifying the needs against which alternatives are assessed to ensure appropriate consideration of costs and benefits and no double booking

The IESO has stated the importance of ensuring that the assessment of wires and NWAs are conducted on an "apples-to-apples" equivalent reliability basis: "comparing the same dollars to the same need (size and timing) and providing the same level of reliability/performance", including qualitative attributes such as dispatchability.[1] To address timing, the IESO assessment reflects the full-time horizon of the longest-lived assets, notionally wires investments whose life could be 60 years+, by assuming shorter lived assets are renewed over that same time frame, such as upgrading of storage assets after their assumed 15 to 20 year life. The PWU supports this approach.

[1] IESO webinar materials, August 25, 2022, page 34.

However, with respect to sizing and providing the same level of reliability/performance, greater clarification and specificity is required than provided by the webinar materials. This is needed in several areas:

a) The scope of the assessment trade-off

The IESO's materials suggest there are three conditions that define the possible scope of options assessed by the benefit-cost trade-offs.

- The wires solution includes new transmission lines and any new bulk system generation/storage assets required to meet the needs.[2]
- The NWAs are local solutions that could have some combination of new local energy efficiency, demand response or generation/storage assets.[3]
- These solutions must meet all of the same requirements as the wires solutions in order to displace the costs of the wires solutions.[4]

The PWU supports the above scope definitions and suggests that these more direct statements would benefit stakeholder understanding of the approach.

b) Definition of the incremental need to be assessed given existing resources

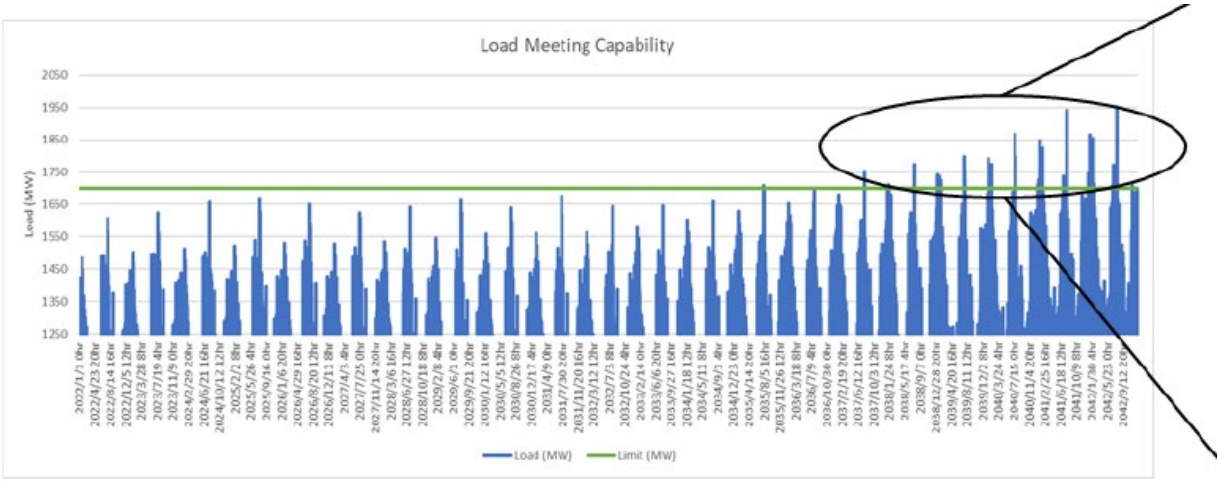
As previously noted, the IESO's needs analysis is underpinned by the demand profile with existing or planned energy efficiency measures already reflected in the demand profiles.[5] The IESO's approach prioritizes the use of existing asset capabilities over the development of new assets. As such, the basis for comparing options should similarly be defined as the incremental demand once existing generation assets are taken into account and involves two considerations:

a. The demand that will be supplied by existing bulk system and local assets over their anticipated life should be subtracted from the demand profile. The IESO, consistent with its annual planning and resource adequacy assessment assumptions, should identify the assumed bulk system and local capabilities that are allocated in their forecasts to supply a region.
b. This is particularly relevant to assets like hydro and nuclear that have relatively fixed costs regardless of output. The energy output of existing fossil fuel assets should be eligible for trade-off against alternatives given the dispatchability, environmental attributes, and avoidable variable costs of the fossil fuel assets.
c. This approach will create an incremental demand profile for a region that will need to be supplied for every hour of the year, inherently defining both the capacity and energy needs to be incrementally supplied over the life of the assessment period.

This definition is fundamentally different than the IESO's "energy-not-served" profile illustrated below.[6] The energy-not-served profile definition presumes the bulk system can supply any energy needs, 24x7, up to the limits of the existing transmission system. This is not a reasonable approach

[2] IESO webinar materials, August 25, 2022, pages 19 and 37.
[3] IESO webinar materials, August 25, 2022, page 19.
[4] IESO webinar materials, August 25, 2022, page 34
[5] IESO webinar materials, August 25, 2022, page 23
[6] IESO webinar materials, August 25, 2022, page 28

given Ontario's emerging capacity and energy shortfalls. It is unclear whether this approach appropriately and fully values many of the benefits of NWAs such as local storage.



c) The nature of the incremental demand to be supplied by the alternatives

The IESO acknowledges that the technology type and sizing of generation and storage options are determined by the characteristics of the need.[7] From a regional planning perspective, the wires option is not only about the transmission system upgrade but also the incremental generation required to supply growing demand across the province.

The PWU has been advising the IESO throughout the Resource Adequacy engagements that demand needs fall into three fundamentally different types: baseload, intermediate, and peak/reserve.[8] These differing characteristics are summarized in Table 1 and materially affect the nature of options that may be available to supply the demand. The operating factor is the most significant influencer on the economics of the options.

All three supply types provide capacity contributions. However, the overall economics are a function of how the integrated solution options would be operated to produce energy. Peak and reserve capacity supplies, for example, would have a negligible percentage of their costs from energy provision.

Table 1 – Comparison of Supply Requirements to Meet Demand Needs

Qualitative Supply Characteristics[9]	**Demand Need**		
	Baseload	**Intermediate**	**Peak/Reserve**
Operating factor*	>98%	30%-60%	<2%/0%
Quick Start			X
Fast Ramp		X	X
Flexible Ops	X	X	X
Dispatchable	X	X	X
Ancillary Services	X	X	
** Illustrative values*			

[7] IESO webinar materials, August 25, 2022, page 28
[8] PWU submissions to the IESO Resource Adequacy engagements, 2020 through 2021.
[9] IESO webinar materials, August 25, 2022, page 20, 34

The presence of anticipated significant growth in demand warrants changing the IESO's NWA assessment methodology. The growing demand, particularly as a result of electrification from decarbonizing the economy increases all three types of demand. The emerging demand is also more heavily weighted towards baseload needs.[10] Low-carbon bulk system baseload supplies, like Ontario's nuclear and hydroelectric assets are potentially the low-cost solution for this type of demand. Regionally located baseload supplies for meeting new demand may offer advantages.

Furthermore, when coupled with storage, bulk system baseload may be the lowest cost option to meet regional intermediate demand needs and minimize the transmission and distribution system upgrade costs.[11] These hybrid "regional / bulk system" solutions warrant cost effectiveness assessments during the regional planning process.

d) The specific demand type targeted by options being assessed

Clearly defining the nature of the demand to be met will help avoid double counting of the potential benefits. Solutions that address peak and reserve capacity should not have any benefits associated with generation output off peak. Off-peak generation capabilities would address intermediate demand. Generation that is operating 24x7 would meet baseload demand. Each of these three demand types offer different capacity contributions as noted earlier. Each also has implications on the economic output of existing assets. For example, variable renewables output that exceeds the incremental demand being addressed may have curtailment implications that must be factored into the benefit cost analysis.

To adequately assess alternatives, regional planning must have an appropriate benefit cost analysis framework in place.

Recommendation #2 - Aligning the NWA cost benefit analysis methodology with the Ontario Energy Board's (OEB) Framework for Energy Innovation Working Group (FEIWG) recommendations and subsequent development of an OEB Benefit Cost Analysis (BCA) framework

The Ontario Energy Board (OEB) commissioned the Framework for Energy Innovation Working Group (FEIWG) to develop a benefit cost analysis (BCA) framework for NWAs.[12] This framework identifies the need to consider the costs and benefits of NWAs as they may impact distribution, transmission, generation resources, and the overall operation of the bulk system. This framework is still under development. The IESO should align its methodology with that framework as it is finalized to create a more robust methodology than is suggested in the IESO's webinar materials.

Recommendation #3 - Ensuring the discount rate methodology is predicated on the ratepayer impacts that reflect the expected financial returns of investing stakeholders.

[10] Strategic Policy Economics, "Electrification Pathways for Ontario", 2021.
[11] Strategic Policy Economics, "Electrification Pathways for Ontario", 2021.
[12] OEB FEIWG BCA Subgroup Final Report, June 2022.

The IESO stated that it uses reference cost assumptions for capital cost, fixed operational, maintenance and administration (OM&A) costs, and variable OM&A costs to create a cash flow over the life of the assets.[13] A Net Present Value (NPV) approach is used to compare the options. When applying the NPV calculation, the IESO assumes a societal discount rate of 4%.[14] It is unclear as to whether the future cash flows that the IESO uses for their calculation reflect the annual cash flows that will be paid by rate payers. The NPV calculation should represent the NPV of future cash flows that ratepayers will be required to pay. If the future cash flows do not reflect annualized rate payer costs, then challenges introduced by the IESO's application of societal discount to nominal cash expenditures include:

1) Investors (both private and regulated) will seek higher rates of return than is provided by the societal discount rate and as such, the cost implications to ratepayers will be higher than the IESO has modelled; and,
2) Different investors, e.g. the private sector, may seek higher rates of return than utilities for their investments in NWAs that may be provided as services to utilities. Rates of return for utilities are regulated. Differences in these rates of return may impact the alternatives differently and hence the outcomes of a BCA. For example, the wires solutions may involve regulated utility rates of return, while NWA solutions offered by the private sector may have materially higher commercial return expectations.

Rationalization of the impacts of the discount rate assumptions is important to ensuring that the BCAs of NWAs are appropriately prepared. This issue should be explored along with the development of the OEB's BCA framework.

Closing

The PWU has a successful track record of working with others in collaborative partnerships. We look forward to continuing to work with the IESO and other energy stakeholders to strengthen and modernize Ontario's electricity system. The PWU is committed to the following principles: Create opportunities for sustainable, high-pay, high-skill jobs; ensure reliable, affordable, environmentally responsible electricity; build economic growth for Ontario's communities; and, promote intelligent reform of Ontario's energy policy.

We believe these recommendations are consistent with and supportive of Ontario's objectives to supply low-cost and reliable electricity for all Ontarians.

[13] IESO webinar materials, August 25, 2022, pages 35-37
[14] Verbally provided by the IESO at the August 25 Webinar.